

REMARKS

In response to the Official Action mailed June 18, 2004, Applicants amend their application and request reconsideration. In this amendment non-elected claims 4-11 are cancelled leaving examined claims 1-3 pending.

While the Examiner acknowledged receipt of the priority document at page 2 of the Office Action, the receipt was not acknowledged on the PTOL-326 Form. That acknowledgment, merely to complete the file in preparation for the issuance of a patent, in the next communication is respectfully requested.

Claim 2 is indicated as allowable and that claim is rewritten in independent form, retaining its original number. Minor non-substantive grammatical changes are made in claim 2.

The invention concerns an apparatus that is particularly useful in extracting trapped air bubbles from blind holes in a substrate. The apparatus provides for circulating a liquid across the surface of the substrate that includes the holes. By ensuring a minimum flow gradient of the liquid across the surface of the substrate, effective removal of the air bubbles from the blind holes is achieved.

In this Amendment, claim 1 is clarified and a grammatical error is corrected. Claim 1 describes the apparatus as including a cup that holds the member to be processed and a pump that pumps a liquid through that cup. Further, claim 1 is amended, consistent with the verbatim description in the patent application at page 7, in lines 13-14, and Figures 2-4 and 6 showing that the liquid flow generally parallel to the surface that is being processed. The amendment in claim 1 to describe this flow as generally parallel to that surface does not alter claim 1 since one of skill in the art would recognize that the flow "along" the surface means the same thing as the substitute words in amended claim 1.

Claim 3 encompasses the embodiment of Figure 7 of the patent application in which a plate 19, adjustable in position within the processing cup is employed to regulate the flow of liquid through that cup.

Claim 1 was rejected as unpatentable over Meakin (U.S. Patent No. 5,143,018) in view of Marte et al. (U.S. Patent No. 6,139,755, hereinafter Marte). This rejection is respectfully traversed on several independent grounds.

Meakin is directed to a vacuum apparatus for depositing a film on a semiconductor substrate. The assertion that the bell jar 1 described by Meakin could correspond to a processing cup is not completely logical when comparing the environment of the invention to the environment of Meakin. The assertion that the vacuum pump 5 of Meakin could

correspond to a pumping device for circulating a liquid chemical is contrary to reason. One of skill in the art would never make such an assertion and would recognize that the vacuum pump described by Meakin is not designed to pump liquids and, also, is incapable of pumping liquids. The entire description of Meakin is consistent with what one of skill in the art would recognize, namely that the vacuum pump 5 of Meakin is intended to extract a gas from the bell jar 1 and is incapable of circulating a liquid through the bell jar 1. Thus, the fundamental premise of the rejection is erroneous. Meakin never describes a pumping device for circulating any liquid chemical through anything. On this ground alone, the rejection cannot properly be maintained.

Marte has no relationship to the invention or to Meakin. Rather, Marte is directed to an apparatus for processing sewage. No one of skill in the arts to which the invention pertains would ever consider modifying the low pressure vapor deposition apparatus of Meakin with an apparatus for processing liquid and semi-liquid sewage. The citation of Marte in the prosecution of this patent application is not rational. Marte is not analogous prior art that can be employed in any rejection for obviousness of any claim in the present patent application. See MPEP 2141.01(a).

A prior publication is only prior art if it meets at least one of two tests: the publication is in the field of the endeavor of the Applicant for patent, or the disclosure of the publication is reasonably pertinent to the particular problem with which the inventor was concerned. Marte totally fails both of these tests and, therefore, cannot be applied as prior art in an obviousness rejection of any claims in this patent application.

The field of the Applicants' endeavor in this instance is the processing of semiconductor devices and particularly the clearing from blind holes of air bubbles in order to produce openings that can be plated. The field of endeavor of Marte is the oxidation of constituents of sewage. The absence of a relationship between these fields of endeavor is readily apparent.

The problem to be solved in the invention is how to clear trapped air bubbles from blind holes in a substrate efficiently. According to Column 2 of Marte, the objective of the Marte disclosure is development of a nozzle system for oxidizing contaminated waste water. It is apparent that there is no relationship between the problem solved in the invention and the problem solved by Marte, clearly indicating that Marte cannot possibly be analogous prior art. Therefore, Marte must be withdrawn as a reference. Upon the withdrawal of Marte, it is apparent that the rejection of claim 1 fails and that that claim must be allowed. In addition, claim 3, which depends from claim 1, must also be allowed.

Even if Marte were a prior art that could be employed in an obviousness rejection of any claim of the present patent application, it would not supply the proposition for which it was allegedly cited. Allegedly Marte describes a flow gradient of 300/s. However, no liquid flow gradient is described in Marte. While various flow rates are described in the cited passage of Marte, none of these flow rates has a gradient of flow as described and claimed in the present patent application. For this additional reason, the rejection of claim 1 is erroneous and should be withdrawn.

Claim 3 is directed to the chemical processor and describes, as part of that processor, a flow regulation plate that is opposite the surface to be processed within the chemical processing cup. As previously described, this claim encompasses the embodiment of Figure 7 in which the plate is element 19. Claim 3 was rejected as unpatentable over Meakin in view of Marte and further in view of Agosta (U.S. Patent No. 4,468,127). Page 4 of the Office Action states that rejection refers to claim 1 but it is understood that the rejection is intended to be made with respect to claim 3. This rejection is respectfully traversed.

As an initial point, the rejection of claim 3 is erroneous and cannot be properly maintained because it is founded upon the asserted combination of Meakin and Marte. As previously explained, Meakin does not meet the limitations of claim 1 for which it was cited, Marte is not analogous art, and, if properly applicable, Marte does not supply the limitation for which it was cited. Thus, even without considering Agosta, the rejection of claim 3 cannot be maintained.

In addition, Agosta does not disclose the limitation of claim 3 and therefore could not, in combination with the other cited publications, establish obviousness as to claim 3. In citing Agosta, the Examiner directed attention to elements 40 and 41 in Figure 3 of Agosta as flow regulation plates of a chemical processor. According to the Office Action, these elements 40 and 41 are plates that oppose a surface of an element to be processed and are located in a chemical processing cup. Nothing about this description is correct.

Elements 40 and 41 of Agosta are identified in column 5, lines 56-59 of Agosta as pressure regulating valves. These valves are shown only schematically and there is no indication in Agosta as to what their construction might be and as to whether they could include any kind of a plate structure. Further, it is readily apparent that these valves 40 and 41 are not inside any structure that might be called a chemical processing cup. Rather, the valves regulate the relative flows of two liquids to a mechanical system, shown in Figure 7 as including an emulsifier 72 and an engine 74. Clearly, the valves are not inside any of those elements that receive the flows of the liquids. To summarize, independent of the rejection of

In re Appln. of NAKAMOTO ET AL.
Application No. 10/615,769

claim 1, none of the elements of the limitation of claim 3 are disclosed in Agosta, demonstrating that the rejection of claim 3 is erroneous.

The foregoing Amendment merely corrects a grammatical error and a translational error in claim 1 and supplies claim 2 in independent form. Thus, there has been no substantive amendment in response to the rejections. Since the rejections are clearly erroneous, the rejections should be withdrawn and claims 1 and 3 allowed. However, if any new rejection is made with respect to claims 1 and 3, or even claim 2, based upon different art or a different legal ground, the new rejection cannot properly be a final rejection since there has been no amendment in response to the prior art rejections.

Respectfully submitted,



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